LIST OF CONTENTS

Number 1

T. D. Karapantsios, S. V. Paras and A. J. Karabelas	1	Statistical characteristics of free falling films at high Reynolds numbers
A. Ying and J. Weisman	23	The relationship between interfacial shear and flow patterns in vertical flow
K. Tsuchiya, T. Miyahara and L.-S. Fan	35	Visualization of bubble–wake interactions for a stream of bubbles in a two-dimensional liquid–solid fluidized bed
A. Tapucu, A. Teyssedou, N. Troche and M. Merilo	51	Pressure losses caused by area changes in a single-channel flow under two-phase flow conditions
A. Teyssedou, A. Tapucu, M. Geçkinli and M. Merilo	65	Axial void distribution in two laterally interconnected channels with blockages
W. G. Gray and S. M. Hassanizadeh	81	Averaging theorems and averaged equations for transport of interface properties in multiphase systems
J. L. Castillo and D. E. Rosner	97	Theory of surface deposition from a binary dilute vapor-containing stream, allowing for equilibrium condensation within the laminar boundary layer
M. A. Rizk and S. E. Elghobashi	119	A two-equation turbulence model for dispersed dilute confined two-phase flows
	I	Announcement

Number 2

A. Pistiner, M. Shapiro and H. Rubin	135	Analysis of fuel pollutant migration in water flow through porous media
B. Oesterlé	155	Internal kinetic transfers in the dispersed phase of a low concentration suspension flow
V. C. Kelessidis and A. E. Dukler	173	Modeling flow pattern transitions for upward gas–liquid flow in vertical concentric and eccentric annuli
A. Wildgen and J. Straub	193	The boiling mechanism in superheated free jets
Z. Ruder, P. J. Hanratty and T. J. Hanratty	209	Necessary conditions for the existence of stable slugs
G. P. Celata, N. Cumo, G. E. Farello and T. Setaro	227	The influence of flow obstructions on the flooding phenomenon in vertical channels

M. Wadle 241 A new formula for the pressure recovery in an abrupt diffusor

G. J. Hwang and **H. H. Shen** 257 Modeling the solid phase stress in a fluid–solid mixture

S. S. Gokhale and **T. K. Bose** 269 Reacting solid particles in one-dimensional nozzle flow

Brief Communications

R. A. Gore and **C. T. Crowe** 279 Effect of particle size on modulating turbulent intensity

A. H. Govan 287 A simple equation for the diffusion coefficient of large particles in a turbulent gas flow

I Book review

II Announcements

Number 3

ANNULAR AND DISPERSED FLOWS

B. J. Azzopardi v Foreword

K. Sekoguchi and **M. Takeishi** 295 Interfacial structures in upward huge wave flow and annular flow regimes

A. H. Govan, G. F. Hewitt, D. G. Owen and **G. Burnett** 307 Wall shear stress measurements in vertical air–water annular two-phase flow

D. M. Jepson, B. J. Azzopardi and **P. B. Whalley** 327 The effect of gas properties on drops in annular flow

T. Sawai, S. Yamauchi and **S. Nakanishi** 341 Behavior of disturbance waves under hydrodynamic non-equilibrium conditions

F. K. Wasden and **A. E. Dukler** 357 Numerical investigation of large wave interactions on free falling films

L. A. Jurman, K. Bruno and **M. J. McCready** 371 Periodic and solitary waves on thin, horizontal, gas-sheared liquid films

V. Kefer, W. Köhler and **W. Kastner** 385 Critical heat flux (CHF) and post-CHF heat transfer in horizontal and inclined evaporator tubes

V. I. Milashenko, B. I. Nigmatulin, V. V. Petukhov and **N. I. Trubkin** 393 Burnout and distribution of liquid in evaporative channels of various lengths

T. Fukano and **A. Ousaka** 403 Prediction of the circumferential distribution of film thickness in horizontal and near-horizontal gas–liquid annular flows

Y. Hagiwara, E. Esmaeilzadeh, H. Tsutsui and **K. Suzuki**	421	Simultaneous measurement of liquid film thickness, wall shear stress and gas flow turbulence of horizontal wavy two-phase flow
G. A. Kallio and **M. W. Reeks**	433	A numerical simulation of particle deposition in turbulent boundary layers
R. T. Lahey Jr and **K. Ohkawa**	447	An experimental investigation of phase distribution in an eccentric annulus
M. M. Lee, T. J. Hanratty and **R. J. Adrian**	459	The interpretation of droplet deposition measurements with a diffusion model
A. H. Govan, G. F. Hewitt and **C. F. Ngan**	471	Particle motion in a turbulent pipe flow

Number 4

J. M. Saiz-Jabardo and **J. A. Bouré**	483	Experiments on void fraction waves
D. Barnea and **L. Shemer**	495	Void fraction measurements in vertical slug flow: applications to slug characteristics and transition
N. Brauner	505	Modelling of wavy flow in turbulent free falling films
J. E. Koskie, I. Mudawar and **W. G. Tiederman**	521	Parallel-wire probes for measurement of thick liquid films
K. Bruno and **M. J. McCready**	531	Processes which control the interfacial wave spectrum in separated gas–liquid flows
E. E. Adams and **R. L. Brown**	553	A constitutive theory for snow as a continuous multiphase mixture
J. Kitscha and **G. Kocamustafaogullari**	573	Breakup criteria for fluid particles
E. Loth and **G. M. Faeth**	589	Structure of underexpanded round air jets submerged in water
A. Teyssedou, A. Tapucu, M. Geçkinli and **M. Merilo**	605	Axial mass flow distribution in two laterally interconnected channels with blockages
G. Barnocky and **R. H. Davis**	627	The lubrication force between spherical drops, bubbles and rigid particles in a viscous fluid
M. Ozawa, K. Akagawa and **T. Sakaguchi**	639	Flow instabilities in parallel-channel flow systems of gas–liquid two-phase mixtures
H. Nasr-El-Din, A. Afacan and **J. H. Masliyah**	659	Solids segregation in slurry flow through a T-junction with a horizontal approach

Letters to the Editor

R. H. Davis 673 Hydrodynamic dispersion in sedimenting systems

C. J. Crowley 675 Discussion of the slug-to-annular flow pattern transition for microgravity conditions

A. E. Dukler 677 Response

I Book Review

II Announcements

Number 5

KATTO FESTSCHRIFT

G. Hetsroni vii To Professor Y. Katto on the occasion of his 65th birthday

K. Nishikawa ix Foreword

I. Michiyoshi and A. Serizawa 679 Two-phase flow studies in Japan

G. Hetsroni 735 Particles–turbulence interaction

M. Osakabe and Y. Kawasaki 747 Top flooding in thin rectangular and annular passages

Y. Sudo and M. Kaminaga 755 A CHF characteristic for downward flow in a narrow vertical rectangular channel heated from both sides

N. Takenaka, T. Fujii, K. Akagawa and K. Nishida 767 Flow pattern transition and heat transfer of inverted annular flow

M. M. Lee, T. J. Hanratty and R. J. Adrian 787 An axial viewing photographic technique to study turbulence characteristics of particles

M. Monde and Y. Mitsutake 803 Enhancement of heat transfer due to bubbles passing through a narrow vertical rectangular channel

J. H. Masliyah, H. Nasr-El-Din and K. Nandakumar 815 Continuous separation of bidisperse suspensions in inclined channels

H. Takahashi, T. Masuyama and K. Noda 831 Unstable flow of a solid–liquid mixture in a horizontal pipe

I. Kataoka and A. Serizawa 843 Basic equations of turbulence in gas–liquid two-phase flow

I Announcements

Number 6

V. E. Nakoryakov, V. V. Kuznetsov and **V. E. Dontsov**	857	Pressure waves in saturated porous media
N. Andritsos, L. Williams and **T. J. Hanratty**	877	Effect of liquid viscosity on the stratified–slug transition in horizontal pipe flow
S. A. Schadel and **T. J. Hanratty**	893	Interpretation of atomization rates of the liquid film in gas–liquid annular flow
E. Dueymes	901	Wet steam flows in industrial large-diameter pipes: flowrate, moisture and pressure drop measurements
A. Biesheuvel and **S. Spoelstra**	911	The added mass coefficient of a dispersion of spherical gas bubbles in liquid
J. S. Seo and **S. G. Bankoff**	925	Entrainment and condensation effects in the upward acceleration of a liquid column
P. Andreussi and **K. Bendiksen**	937	An investigation of void fraction in liquid slugs for horizontal and inclined gas–liquid pipe flow
J. Hart, P. J. Hamersma and **J. M. H. Fortuin**	947	Correlations predicting frictional pressure drop and liquid holdup during horizontal gas–liquid pipe flow with a small liquid holdup
S. T. Hwang, H. M. Soliman and **R. T. Lahey Jr**	965	Phase separation in impacting wyes and tees
N. Coutris, J. M. Delhaye and **R. Nakach**	977	Two-phase flow modelling: the closure issue for a two-layer flow
E. L. Hanzevack and **G. D. Demetriou**	985	Effect of velocity and pipeline configuration on dispersion in turbulent hydrocarbon–water flow using laser image processing
T. F. Lin, J. F. Jou and **C. H. Hwang**	997	Turbulent forced convective heat transfer in two-phase evaporating droplet flow through a vertical pipe
Brief Communication		
R. Pal and **E. Rhodes**	1011	Emulsion flow in pipelines
	I	Book Review
	III	Announcements

AUTHOR INDEX

Adams, E. E., 553
Adrian, R. J., 459, 787
Afacan, A., 659
Akagawa, K., 639, 767
Andreussi, P., 937
Andritsos, N., 877
Azzopardi, B. J., 327

Bankoff, S. G., 925
Barnea, D., 495
Barnocky, G., 627
Bendiksen, K., 937
Biesheuvel, A., 911
Bose, T. K., 269
Bouré, J. A., 483
Brauner, N., 505
Brown, R. L., 553
Bruno, K., 371, 531
Burnett, G., 307

Castillo, J. L., 97
Celata, G. P., 227
Coutris, N., 977
Crowe, C. T., 279
Crowley, C. J., 675
Cumo, N., 227

Davis, R. H., 627, 673
Delhaye, J. M., 977
Demetriou, G. D., 985
Dontsov, V. E., 857
Dueymes, E., 901
Dukler, A. E., 173, 357, 677

Elghobashi, S. E., 119
Esmaeilzadeh, E., 421

Faeth, G. M., 589
Fan, L.-S., 35
Farello, G. E., 227
Fortuin, J. M. H., 947
Fujii, T., 767
Fukano, T., 403

Geçkinli, M., 65, 605
Gokhale, S. S., 269
Gore, R. A., 279
Govan, A. H., 287, 307, 471
Gray, W. G., 81

Hagiwara, Y., 421
Hamersma, P. J., 947
Hanratty, P. J., 209
Hanratty, T. J., 209, 459, 787, 877, 893
Hanzevack, E. L., 985
Hart, J., 947
Hassanizadeh, S. M., 81
Hetsroni, G., 735
Hewitt, G. F., 307, 471
Hwang, C. H., 997
Hwang, G. J., 257
Hwang, S. T., 965

Jepson, D. M., 327
Jou, J. F., 997
Jurman, L. A., 371

Kallio, G. A., 433
Kaminaga, M., 755
Karabelas, A. J., 1
Karapantsios, T. D., 1
Kastner, W., 385
Kataoka, I., 843
Kawasaki, Y., 747
Kefer, V., 385
Kelessidis, V. C., 173
Kitscha, J., 573
Kocamustafaogullari, G., 573
Köhler, W., 385
Koskie, J. E., 521
Kuznetsov, V. V., 857

Lahey, R. T. Jr, 447, 965
Lee, M. M., 459, 787
Lin, T. F., 997
Loth, E., 589

Masliyah, J. H., 659, 815
Masuyama, T., 831
McCready, M. J., 371, 531
Merilo, M., 51, 65, 605
Michiyoshi, I., 679
Milashenko, V. I., 393
Mitsutake, Y., 803
Miyahara, T., 35
Monde, M., 803
Mudawar, I., 521

Nakach, R., 977
Nakanishi, S., 341
Nakoryakov, V. E., 857
Nandakumar, K., 815
Nasr-El-Din, H., 659, 815
Ngan, C. F., 471
Nigmatulin, B. I., 393
Nishida, K., 767
Noda, K., 831

Oesterlé, B., 155
Ohkawa, K., 447
Osakabe, M., 747
Ousaka, A., 403
Owen, D. G., 307
Ozawa, M., 639

Pal, R., 1011
Paras, S. V., 1
Petukhov, V. V., 393
Pistiner, A., 135

Reeks, M. W., 433
Rhodes, E., 1011
Rizk, M. A., 119
Rosner, D. E., 97
Rubin, H., 135
Ruder, Z., 209

Saiz-Jabardo, J. M., 483
Sakaguchi, T., 639
Sawai, T., 341
Schadel, S. A., 893
Sekoguchi, K., 295
Seo, J. S., 925
Serizawa, A., 679, 843
Setaro, T., 227
Shapiro, M., 135
Shemer, L., 495
Shen, H. H., 257
Soliman, H. M., 965
Spoelstra, S., 911
Straub, J., 193
Sudo, Y., 755
Suzuki, K., 421

Takahashi, H., 831
Takeishi, M., 295
Takenaka, N., 767
Tapucu, A., 51, 65, 605
Teyssedou A., 51, 65, 605
Tiederman, W. G., 521
Troche N., 51
Trubkin, N. I., 393
Tsuchiya, K., 35
Tsutsui, H., 421

Wadle, M., 241
Wasden, F. K., 357
Weisman, J., 23
Whalley, P. B., 327
Wildgen, A., 193
Williams, L., 877

Yamauchi, S., 341
Ying, A., 23

Printed in Great Britain by BPCC Wheatons Ltd, Exeter